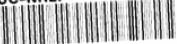


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High School
A study of absences in relation to grades and mental ratings

By

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" "
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THESIS

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A STUDY OF ABSENCE IN RELATION

TO

GRADES AND INTELLIGENCE RATINGS.

INTRODUCTION

Attendance has always been considered essential to good school work. The relation of attendance to intelligence and to school grades is a very important problem. Now that we have both intelligence ratings and class grades it becomes possible to get an answer to this problem. When a student is absent either because of illness or laziness, the fact that he has missed his class exercises should seriously affect his class standing. He misses the instruction, inspiration, co-operation, explanations, assignments, drill, in fact, if the school should exist at all it would seem that it should be attended.

RELATIONSHIP OF GRADES AND HEALTH

That there has been a close relationship between ill health and school grades has long been discussed.

It has not been satisfactorily proven that there is a very high correlation between grades of ill health, but it has been shown that ill health does effect the school work, especially the grades. This factor in attendance has not been the subject of much study in the high schools. The High School has been considered important because of its subject matter, therefore grades have probably been considered more important than attendance, health and other general factors. Since compulsory education laws are forcing more students into the High Schools, a study of attendance in secondary schools becomes more important.

✓ CAUSES OF IRREGULAR ATTENDANCE.

Irregular attendance might be found due to numerous factors. The occupations and financial status of the student and his parents have considerable influence. If both parents are employed, quite naturally the home influence is not felt as keenly as when the mother finds no other duties outside the home. If the child is an orphan, with one parent employed, the same condition, except in very unusual cases, would exist. Ill health

on the part of either or both parents often necessitates frequent absence as well as ill health on the part of the pupil himself. Quite often home duties, because of parental employment or illness, necessitates the pupil remaining at home at irregular intervals with the consent of the parent. Then too, irregular attendance is found among pupils whose homes are not effected by financial needs, a distaste for school activities leads either to truancy or absence because of a very slight excuse. But essentially, absence is caused by actual ill health, owing to our stringent attendance laws if truancy officers co-operate with the school officials and parents of the students.

PHYSICAL ABSENCE.

W. C. Reeves of St. Louis, Missouri,¹ asserts that there "is a consistent relationship between physical defects and class standing, that the normal child excels those having physical defects, although the advantage in completed work is not as marked as that in class standing,

1. W. C. Reeves: Elementary School Journal, Vol. 15. The Relation between Physical Health Conditions of Children and their School Progress.

that children marked one in nutrition stand higher than those marked two. Physical defects, attendance and class standing are conducive to intermittent absence, which in the course of the school year is destructive to a higher percentage of attendance. The results of intermittent attendance may not be seen in the progress from grade to grade, yet they are evident in the standing of the individual in the class." This is demonstrated in Mr. Reeve's table in which 34.9% of the pupils in Class I, ave 95% in attendance, while in Class II they have 23.5%, and in Class III, 16.3%. He groups the students absent 54% of the school period or less, and 7.8% of them are in group III, 2.3% in group II and 1% in group I.

Mr. Reeves states further that "these facts indicate a causal relationship between physical condition and attendance, and a high correlation between higher standing in class and a high percentage in attendance: . . . that physical condition, attendance and home environment as a rule are related factors, that they seldom act as units on the work of children in school and because of this a correlation that would even approach mathematical accuracy would be difficult to establish,

as in most cases it would be impossible to isolate the difference in their bearing to school progress. However the study does not point out that correlation between any of the factors and character of work done in school is positive and as such merits the careful consideration of administrators, supervisors and teachers."

Mr. Reeves considered children of the first eight grades.

DIFFERENCE BETWEEN DEFECTIVE AND NORMAL CHILDREN.

Dr. Cornelle's investigations² determine that there is not much difference in the grades of defective children and normal. This would have some bearing upon attendance, as normal children are logically more regular in attendance than the sub-normal. The tables of Dr. Cornelle give the following results:

Percentage in studies.

| | |
|-------------------------------|------|
| Normal Children | 75 |
| Average Children | 74 |
| General Defectives | 72.5 |
| Adenoids and enlarged tonsils | 72 |

2. Cornelle. The Psychological Clinic, January 1909.

But in another study Schulte found that the per cent of defectives was higher among students not exempt from examination than among those exempt.

Dr. Neuneyer of Philadelphia, in a similar study as conducted by L. P. Vires³ in his article considering children exempt and non-exempt from examination, found that the brighter children seemed to be afflicted about the same as those less bright, also that there is little difference between defective boys and girls. The study brings out the fact that "retarded and above age pupils have fewer defects than normal pupils". Age is an important factor, for with the exception of vision, defects tend to decrease with age. "The number of defectives among dull children does not differ from the number among bright children, but the dull child is found to be more defective in degree."

DEFECTS AND INTELLIGENCE.

In a study in New Jersey by Superintendent T. C. Prvan of two thousand twenty children, found in the same

3. Vires, L. P. *American Physical Education Review*, Vol. 14. Physical Defects and School Progress.

article, that among the cases assigned for excessive
age in the respective grades, 20.6% were due to absence. It
is determined that physical defects were a cause but
not the cause of retardation and that the bearing of
physical defects on school retardation does not seem very
great. Nearly 20% of the mentally normal children have
physical defects, while only 7% of those above normal are
defective. And again the percentage of defective
children in the lower grades is higher than in the upper
grades.

R. Bryan states in his conclusion, "We have
shown that physical defects decrease with age, that age
is important and must be considered. Medical inspection
can prevent misery and save lives, school doctors will
make it easier and happier, but the royal road to learn-
ing cannot be found in the surgeon's knife. Old fashioned
industry, abstinence, intelligence and regularity will
hold sway and reasons for poor scholarship are starting,
absence, laziness, and stupidity."

ATTACHMENT AND EXPLANATION.

^{wh}
We see that he uses absence as one of the central-

cautious causes of poor scholarship. It would be illogical conclusion that such would be the case, although it might be more noticeable in the upper than in the secondary schools. It is such occasional hints in various studies that suggests this study.

We find a year's⁴ statement, "Perhaps most of the nervous breakdowns in school are among the children of mediocre ability. Such children, endowed with unusual individuality and unusually sensitive to anxious parents and irritable to the end that they feel they must rank high or among the best in their class. By undue exertions of effort these children sometimes do attain high marks and even first place in their class. But it is at tremendous cost."

Thus it would seem that poor scholarship might be contributory to absence indirectly. We can now infer, even.

In a recent report of the Commissioner of Education, Washington, of the per cent of the school term not attended by the pupils of the United States, 25.4% of the school term was wasted. The lowest percentage

4. Meyers: Measuring Inds - Nelson and Gagey.

was in Indiana, 7.1%, the highest 41.1% in Kentucky. California is recorded twenty seventh in the list with 23.5%.

S. C. Courtes⁵ of Detroit in his article, says that in the average school system about forty per cent of the children make the same or lower scores at the end of the year and that only one child in five makes a reasonable gain.

DEFECTS AND PROGRESS. V

Leonard Ayres,⁶ associate director of the Department of Child hygiene of the Russell Sage Foundation, says that the average number of grades completed by pupils during the twelve time there was nine per cent less than those having no physical defects.

The following table taken from his article gives

• • • • •

S. C. C. Courtes: American Physical Education Review, Vol. 27. Measurement of Relation between Physical and Mental Growth.

C. Ayres, Leonard: American Physical Education Review, Vol. 10. Physical and Mental Defects and School Progress.

the number of years necessary for eight grades:

| Kinds of Defects | Number of Years. |
|------------------|------------------|
| None | 8 |
| Vision | 8 |
| Teeth | 8.5 |
| Breathing | 8.6 |
| Tonsils | 8.7 |
| Adenoids | 8.1 |
| Enlarged glands. | 9.3 |

One half of the children have defective teeth, one in seven defective breathing, one in four defective tonsils, one in eight adenoids and one half of the enlarged glands.

In another article on the relation of child and college to health, Mr. Evans says: "Four to fifth the latter time that of a preparation age, statistics show the stronger, longer lived and happier than our forefathers. The college girl is larger, more robust, less nervous than their servilely employed. The school must deal with the physical as well as the mental man."

As health bears a close relation to education, it is a most important factor to be considered.

It is obvious from the study of these cases that there is a lack of agreement. The relationships were established in the above instances in terms of grades in school work and attendance records. Now it would seem that the teacher often allows the attendance record to be a determining factor, especially if that record is poor and the student in good health. A further discussion is derived from a comparison of the capacity of the student and his grades. This combination will possibly give a clear insight into the relationship. Now we not only have the student's attendance record and his grades, but his actual intelligence rating, found by standardized mental tests. There must be some relation between them and mental tests.

Do our schools of today deal with the physical as well as the mental man successfully? Is it possible to get this point of view and its relation to intelligence and the high school grades from the study of attendance?

COLLECTING THE DATA.

The data for this study was gathered from a senior high school of seventeen hundred pupils, about fourteen hundred of whom had been given mental tests which were available at the time of the study. The tests that had been given and the results of which were available in the files were the Army Alpha, Form Seven, the Oakland Edition Form A of the Otis and the Vernon Test Form E. Of the cases studied one hundred seventeen were Terman, thirty seven Alpha and five were Dis tests, owing to the fact that it was not possible to select the three distinct types of students, superior, average and below average from one type of test. It seemed advisable to do this, for the correlation of the three tests runs fairly high. The study is more definitely defined by confining the cases strictly to the three groups and using the three tests, rather than have the types selected entirely from one test and merge gradually from one group to another. In a study... Miller⁷ finds the correlation between the two as

7. The Twenty-First Year Book of the National Society for the Study of Education:-
Miller, L. S.: Administrative Use of Intelligence in the High Schools.

and Alpha scores to be .803, and beta in the TTS and Alpha to be .716. The correlation between the TTS and German is .741, so there is practically no error and the use of the above is as reliable as if the German Test only had been used in the study.

In a Junior High School study,⁷ other tests correlate as follows: .851, .665, .687, indicating there is a close correlation between the majority of the tests, although the highest correlation was found between the National Scale A and the Scholastic Test, tests not used in this study.

III. THE STUDY.

These one hundred fifty nine students thus selected were alphabetically arranged and the attendance record for the entire school for three years (being the longest period any one student had been in school) was examined in order to secure their respective records. The attendance records were kept in books, two for a period of four years, in which the name of each student was re-

7. Rabue, L. L.: The Use of Intelligence Tests in the Junior High School.

corded with his attendance history for each subject of the day. This system meant the survey of sixty such rolls, and the number of times absent, the distribution of absences, and the reason where possible were carefully noted.

2. GRADE INDEX.

The scholarship record for each pupil for his entire period in high school was also secured from the Secretary's files. From this record his scholarship average was found. As the grades were indicated by a numerical system (i.e. 1, 2, 3, 4, . . .) the scholarship average was found by multiplying the number of ones by nine, twos by eight, threes by seven, fours by six and fives by zero. The resulting products were added together and divided by the number of grades recorded. Table one gives the complete process of securing the grade index.

TABLE I.

| | | | |
|-----------------------------|---|----|--|
| English (1a) | I | I | (1b) I |
| Mathematics (2a) | I | II | |
| Language (3a ³) | I | I | $9 \times 11 = 99$ |
| (2c ¹) | | II | $8 \times 3 = 24$ |
| (5b ⁴) | I | | $\begin{array}{r} 14 \\ \times 17 \\ \hline 123 \end{array}$ |
| (5c ²) | I | | 8.78 |
| (3b) | I | | |

Domestic science I II I

(1a) (2a) etcetera, represent University examinations only, as given on the record cards.

In English this particular student had fifteen ones, in Mathematics a one and a two, in Domestic science two ones and a two, in Language five ones and one two, making a total of eleven ones and three twos. The total number of ones was multiplied by nine and the total number of twos by eight. The sum of these products was one hundred twenty-three. This result was divided by fourteen, the total number of grades considered, giving a result of 8.78. The decimal point was moved one place to the right, giving a scholarship average of 87.

in the terms of the intelligence quotient, which is the ratio of one hundred.⁸

30. Let us take the data of Table I.

In taking the entire group and using the Pearson coeff. of correlation, the intelligence quotient and scholarship grade for the entire group had a correlation of .687, Table two.

31. Now let us

$$r = \frac{\sum_{i=1}^{150} (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{150} (x_i - \bar{x})^2} \sqrt{\sum_{i=1}^{150} (y_i - \bar{y})^2}}$$

$$\frac{12,81.35}{12,139.17} = +.67$$

The coefficient of correlation of the entire group of scholars from the recent testing. The intelligence quotient, column 1, and the average of the grade, column 2, are correlated, column 3, in terms of scholarship, correlation coefficient.

- 8. *Intelligence and its Relation to the Possibilities of the Individual*. Illinois Tests of the University of Illinois, published by the University of Illinois Press, Urbana, Illinois, 1921.
- 9. *Intelligence Test*. Trabue, Jr. - Intelligence testing in Junior High Schools.

After the first 10 minutes of the game, the puck was in the
consistently in the other corner. In the
meanwhile, the first checker score was 10, leaving 100 to
be scored.

Intelligence tests. In a number of experiments, intelligence tests have been given in a random order of presentation. In one such experiment, the correlation between the intelligence quotient and the grades was found to be .12. The highest mean grade was 1.00, the lowest .62, the mean of .77, the range of .37-1.00, and the standard deviation of .14. Thus, the probability of the difference in the fact that one is a small amount of grade correlated in the first case.

10. Party First on 100.

T. E. MITT.

Correlation of I. Q. and average Grade.

(The groups of 37, ascending order of I.Q.)

| Groups | Correlation |
|---------|------------------|
| Lowest | .13 plus |
| Median | (minus) .07 plus |
| Highest | .14 plus |

The correlation coefficient is .13, which is not statistically significant, but for the 371 individuals, there is still some correlation. Using the same data, but taking the median as the order of grades, there was still no correlation; take it from me.

T. E. MITT.

Correlation of I.Q. and average Grade.

(The groups of 37, descending order of I.Q.)

| Group | Correlation |
|---------|-------------|
| Highest | .89 plus |
| Median | .89 minus |
| Lowest | .04 |

This simply corroborates the facts in the groups of correlations in table three.

The lack of correlation suggested plotting the curve and we found the curves irregular, table five. Since this is true we can not expect a higher co-efficient of correlation. However if all are taken together, and all cases included, the distribution would be more nearly normal, thus justifying the correlation of .557.

TABLE V
Distribution of I. Qs.

| I.Q. | Cases | Number. |
|-------|---------------------------------|---------|
| 70-74 | XXXXX | 5 |
| 75-79 | XXXXXXXXXXXXXX | 14 |
| 80- | XXXXXXXXXXXXXXXXXXXXXX | 24 |
| 85- | XX | 2 |
| 90- | | 0 |
| 95- | XXX | 3 |
| 100- | XXXX | 4 |
| 105- | XXXXXXXXXXXXXXXXXXXXXX (median) | 23 |
| 110- | XXXXXXXXXXXXXXXXXXXXXX | 30 |
| 115- | XXXX | 4 |
| 120- | XX | 2 |
| 125- | XXXX | 4 |
| 130- | XXXXXXXXXXXXXXXXXXXXXX | 25 |
| 135- | XXXXXX | 10 |
| 140- | | 0 |
| 145- | XX | 2 |
| 150- | XX | 2 |
| 155- | X | 1 |
| 160- | X | 1 |
| Total | <hr/> 159 | |

DISTRIBUTION OF I.Q.s.

The distribution of intelligence quotients in table five are worked in groups of five, the first group from seventy to seventy four, contains five cases; the second, seventy five to seventy nine, contains fourteen cases; the third, eighty to eighty four, etcetera.

In table six, the distribution of intelligence quotients is worked out in groups of ten. From seventy nine there are nineteen cases, eighty to eighty nine, twenty six cases et cetera. In this group the median intelligence quotient is found to be one hundred nine, the lowest intelligence quotient, seventy, the highest one hundred sixty nine, making a difference of forty three between the first and the fourth, and a difference of eighty one between the lowest and the highest; table seven.

TABLE VI.

| I. Q. | Cases |
|-------|------------|
| 70-79 | 19 |
| 80-89 | 26 |
| 90- | 3 |
| 100- | 32 |
| 110- | 34 |
| 120- | 6 |
| 130- | 33 |
| 140- | 2 |
| 150- | 5 |
| 160- | <u>1</u> |
| | <u>169</u> |

TABLE VII.

| | |
|---------------|------|
| Median I. Q. | 109 |
| Quartrile I | 84 |
| Quartrile IV | 127 |
| Lowest I. Q. | 70 |
| Highest I. Q. | 161. |

LETTER GRADES.

For the sake of convenience in describing the students a letter grade was assigned in terms of their intelligence quotient and grades plus the classification of their advisers. The per cent of letter grades was found in thirds of students according to intelligence. In group A, ninety four per cent were in the highest third and six percent in lowest. In group B, seventy five per cent were in the highest group, twenty five in the median group. In the C plus groups seven per cent were in the highest, eighty eight in the median and five in the lowest third. In group C, one hundred per cent came in the lowest third, in Group D, two per cent in the highest, none in the middle third and ninety eight in the lowest. This demonstrates some correlation between teacher's grades and intelligence tests. The mental test results of the individual students are generally unknown to their class teachers. None of the students rated A, or B, or in the first and second section, fall in the lowest third. Those in the third section plus, the C plus group, come largely in the median group, a larger per cent in the upper than in the lower. The C and C minus grades fall

entirely in the lowest third, as do the D grades, with the exception of two per cent which surprisingly falls in the highest third, table eight.

TABLE VIII.

| Letter Grade | Highest Third | Middle Third | Lowest Third |
|--------------|------------------|-----------------|-----------------|
| A | 94% | 6% | |
| B | 75% | 25% | |
| C+ | 7% | 88% | 5% |
| C- | | | 100% |
| D | 2% | | 98% |

The two per cent in the highest third in the D group was found to be comprised of students of foreign birth with a very inadequate knowledge of the English language. This handicap of course prevented them from passing in the general knowledge of the tests, while by intensive study they were able to learn their daily lessons in a language almost foreign to them and thus attain high scholarship grades. It is quite apparent that the letter rating correlates closely with the intelligence quotient.

By dividing the students into three groups according to intelligence quotients, the highest third was one hundred per cent, in the middle eighty-eight and in the lowest eighty-six per cent. In the highest group the median scholarship was eighty-six, the median scholarship in the middle third was seventy-seven and in the lowest, seventy-five. While in the lowest scholarship group the highest was sixty-eight, the middle third, sixty and in the lowest third, sixty. There was a difference of forty between the highest third of the highest group and the lowest third of the lowest scholarship group. The highest third of the median scholarship is four points lower than the lowest third of the highest group, while the lowest third of the median scholarship is seven points higher than the highest of the lowest group; twelve per cent.

TABLE IX.

Scholarship by Thirds of Students,
According to Intelligence Quotients.

| | Highest Third | Middle Third | Lowest Third |
|---------------------|------------------|-----------------|-----------------|
| Median scholarship | 83 | 77 | 75 |
| Lowest scholarship | 68 | 60 | 60 |
| Highest scholarship | 100 | 89 | 86 |

There is evidently a greater variation between those in the highest and middle third between the middle and the lowest.

ASSIGNED RATINGS AND I.Q. CORRELATION.

The intelligence quotients were listed according to assigned ratings, median intelligence quotient, highest intelligence quotient and the lowest compared. The median intelligence quotient of each group was lower than the group above; as in group A, median intelligence quotient was 130.5; in group B 116.5 et cetera. In the same order, however, in the highest intelligence quotient

grouping, the highest in the D group, was thirty higher than that of the C group, also higher than the C plus and B group. In the list of lowest intelligence quotients, they also were in the descending order, as were the assigned ratings, with the exception of the case of the A and B group. The lowest intelligence quotient in the A group was 107 while in the B group it was 110; table ten.

TABLE X

| Assigned Rating | Median I.Q. | Highest I.Q. | Lowest I.Q. | Number of cases. |
|-----------------|-------------|--------------|-------------|------------------|
| A | 132.5 | 161 | 107 | 48 |
| B | 116.5 | 123 | 112 | 4 |
| C+ | 109 | 114 | 96 | 56 |
| C- | 100 | 103 | 95 | 5 |
| C- | 89 | | | 1 |
| D | 80 | 153 | 70 | 45 |

SCHOLARSHIP AND ACHIEVING GO FIELD.

The same group were put together with reference to scholarship according to assigned rating. The highest grade was one hundred, in group A, while the lowest was

sixty eight, which is seven points lower than the highest grade in group A. The highest grade in group C is two points higher than the median grade in A. The highest grade in the C plus grade is greater than the highest grade in the B group, as is the highest grade in the C group. The median grade in C plus and C groups are the same, and the median grade of C minus is greater than the median grade of both C plus and C. The lowest grade in the D group is equal to the lowest grade in the C plus group, table eleven.

TABLE XI.

Scholarship According to Assigned Rating.

| Assigned Rating | Median Grade | Highest Grade | Lowest Grade | Number of cases. |
|-----------------|--------------|---------------|--------------|------------------|
| A | 82.5 | 100 | 63 | 48 |
| B | 78 | 80 | 75 | 4 |
| C+ | 77 | 89 | 60 | 56 |
| C | 77 | 51 | 76 | 5 |
| C- | 30 | | | 1 |
| D | 77 | 100 | 60 | 45 |
| Entire group | 77 | 100 | 60 | 159 |

From the two preceding tables we see that the scholarship does not agree with the assigned rating; as well as the intelligence quotient does. This is probably

due to the fact that grades are given by teachers who must necessarily be influenced by personality, while the intelligence quotients, agreeing with the assigned ratings, are more representative of the students' actual capacity.

In table eleven which is a comparison of intelligence quotients and grades, there is a correlation between the assigned ratings and the intelligence quotients with the exception of one or two unusual cases.

ANALYSIS AND CONCLUSION.

The matter of attendance and its correlation with teacher's grades and intelligence quotients is still a question. We are not endeavoring to bring a final conclusion on this subject for it necessarily varies according to the conditions of student enrollment, the environment and the economic condition of the students.

I. Qs. AND GRADES.

The one hundred fifty nine cases were segregated into three groups according to intelligence quotients, highest third, middle third and lowest third. The relation

number of absences in each group were about the same, the lowest number of absences in each group was zero, while the greatest number of absences occurred in the highest third, fewer in the middle group and then a greater number again in the lowest third; table twelve. Is it possible that those in the middle group have better health? Or is it that those in the upper group feel less in the need of attending school, while those in the lowest group find it irksome?

TABLE XII (a)
Attendance by Thirds of Students Group
according to I. Q.s.

| | Highest Third | Middle Third | Lowest Third |
|-----------------------------|------------------|-----------------|-----------------|
| Median number of absences | 1.6 | 2.0 | 2.75 |
| Lowest Number of absences | 0 | 0 | 0 |
| Greatest number of absences | 59.25 | 21.5 | 32.75 |

Owing to the fact that in case, that of 59.25 absences was rather exceptional, it seemed advisable to omit the highest number of each group to see if there was any difference in the results; table twelve, b.

TABLE XII (b)

| | Highest Third | Middle Third | Lowest Third |
|---------------------------|------------------|-----------------|-----------------|
| Median number of absences | 1.5 | 2.25 | 2.5 |
| Least number | 0 | 0 | 0 |
| Greatest number | 34.75 | 30.5 | 32.5 |

The results are practically the same as those of table twelve (a). The median number of absences show a slight variation of twenty five hundredths in the middle and last group. The lowest number of absences still is zero, while the greatest median number of absences continues to be the highest, in the highest third, almost as high in the lowest third, while the greatest number of absences is the least in the middle third. This substantiates the statement previously made that children of mediocre ability are more regular in attendance because of their recognition of the fact that they gain by regular attendance, those in the lowest third unnecessary and those of the third group find it likewise. So those highest in intelligence tend to have the greatest number of absences, especially since the case of the greatest number of absences, fifty nine, was exceptional,

that of a student of extremely poor health but good mental rating. There is not, however, enough difference to make a definite conclusion, but it indicates that low intelligence tends toward irregular attendance.

ABSENCE ACCORDING TO ASSIGNED GRADES.

In tabulating the days of absence according to assigned grades, the median number of absences in the honor group was 1.5, in the median group it was 3.5 and in the lowest third 2.5. The greatest number of absences in the highest intelligence median group was 34.75, omitting the case of 89.25 absences, in the middle group it was 21.5 and in the lowest 38.75; Table Thirteen.

TABLE XIII.

Data of absence according to assigned grades.

| Assigned grades | Median Number Absences | Greatest number | Least number | Number of cases. |
|-----------------|---------------------------|---------------------|-----------------|------------------------|
| Highest Third | 1.5 | (34.75 or 89.25) | 0 | 62 or 53 |
| Middle Third | 2.5 | 21.5 | 0 | 53 |
| Lowest Third | 2.5 | 38.75 | 0 | 53 |

This data confirms the fact again that the middle

group realize their deficiencies and attend regularly; the upper find it not so necessary to attend regularly to retain high standards; the lowest group find it irksome. The lowest number of absences was zero in each group.

I. Q., SCHOLARSHIP AND MILD DULLNESS CORRELATED.

The intelligence quotient and scholarship were tabulated in such a way, as to plot the median days absent from each group, table fourteen. The scores were grouped according to relationship, in sections of five points from one hundred to sixty. Each of these sections was divided into thirds and will be followed by quotients, highest third, median and lowest third. Then the median days of absence of each group was determined. There was but one case of 100% scholarship, found in the highest intelligence group with no absences. There were no cases in the 95-99 group. In the 90-94 group the median days of absence was 6.26%. This was in the highest intelligence quotient group (one case) and only two cases. In the 85-89 group the median days of absence is 11.12%. This group had sixteen cases. In the 80-84 group the

median of days of absence is 1.5, with five cases. The median in the lowest fifth was zero, with two cases considered, 24 entries. It is impossible to establish a definite conclusion from Table Fourteen.

TABLE XIV.

Table by I. Q. and Scholarship showing the median of days of absence for each group.

(a) The number of cases.

1.00-1.99.

| Scholarship | 1st quartile 1st decile | Median 1st decile | 3rd quartile 3rd decile |
|-------------|----------------------------|----------------------|----------------------------|
| 100 | 0 (1) | | |
| 95-99 | 3.625 (2) | | |
| 90-94 | 1.125 (6) | 1.5 (5) | |
| 85-89 | 1.5 (15) | 1.25 (12) | 2 (3) |
| 80-84 | 0.5 (15) | 2.0 (20) | 3.75 (1) |
| 75-79 | 1.25 (3) | 2.75 (3) | 2.0 (3) |
| 70-74 | 1.0 (1) | 1.0 (3) | 2.75 (10) |
| 65-69 | | 11.125 (2) | 2.0 (3) |
| 60-64 | | | 1.125 (4) |

DISTRIBUTION OF I. Q. AND SCHOLARSHIP,

WITH MEDIAN DAYS OF ABSENCE.

When the 2,100 individual cases is divided in groups of ten, according to the differences between the intelligence quotient and scholarship, the greatest difference being seventy-nine and the lowest a negative nine. They were divided into three intelligence quotient groups and the median days of absence noted for each group. In the highest difference group, there were thirty cases, the median days of absence were 1.35; these were placed in the middle and lowest third. In the 60-69 group, seven cases were in the highest third, the median days of absence were 1.28, again the final six cases in the middle and lowest third. In the 50-59 group, seventeen cases were in the highest third, median 1.5 with no cases in the other two sections. In the 40-49 group were eighteen cases in the highest third, with a median of 2.25, seven cases in the middle third, median 3.6 and no cases in the third group. For the first time we have cases in each group in the 30-39 difference section. The greatest number of cases begins to appear in the central group, diminishes and finally disappears until all the cases are in the third group.

From this we reach a conclusion similar to a previous one, that in cases of the bright students the difference between scholarship and intelligence quotient had little effect on attendance. The student with high intelligence quotient and good grades pays little attention to attendance. The student making grades about equal to intelligence quotient was regular in attendance while the student whose intelligence quotient and scholarship both are low, gets discouraged and irregular in attendance as a result, table fifteen.

Table by I. Q. groups and difference between I. Q. and scholarship; with median days of absence noted for groups.

(-.) Number of Cases.

| Difference between I. Q. and scholarship | I. Q. Groups | | |
|---|-------------------------|-------------------------|-------------------------|
| | Median Days of Absence. | Median Days of Absence. | Median Days of Absence. |
| 170-199 | 1.075 (1) | | |
| 180-199 | 1.25 (7) | | |
| 200-219 | 1.5 (15) | | |
| 220-239 | 1.25 (13) | 2.0 (7) | |
| 240-259 | 2.5 (9) | 2.0 (29) | 2.0 (2) |
| 260-279 | | 1.5 (15) | 2.375 (5) |
| 280-299 | | 2.125 (2) | 2. (15) |
| 300-319 | | | 1.75 (37) |
| Average | | | 2.0 (7) |

ANALYSIS OF THE DATA.

Only seven of the entire group are located above

their intelligence quotient and the greatest of these is only four points higher than the capacity granted by their mental measurement. Twenty-seven are "working even," the difference between the intelligence quotient and class grades ranging from zero to nine, showing them as practically working up to their fullest capacity. The greatest number of students, forty, in any one group of differences falls in the thirty to forty class; the median group. The least number is in the highest group, seventy to seventy nine, where we have only five students. There seems to be a gradual diminution of the number of students in both directions. In the exception of the next to the lowest group, zero to three, where the number is able to hold its own increase.

The exceptional cases of low intelligence quotients and high grades are responsible for the deviations in order, but owing to the nature of these cases, as has been explained previously, they may be dropped entirely.

ETHOD OF ABSENCE ON THE GRADE.

The conclusion points to the fact that there is little if any effect of absence upon scholarship. But

a student, and in this case, the student is a girl. In other words, a girl student, and the student is a girl. This is the first point of difference, and the second point of difference is that the student is a girl.

2. The student is a girl.

So, we are personally acquainted with the girl school in which the student is, and we would suggest the following additional observations:

- (1) The student of 11 years is a girl, and she is really turned out like a girl, and she is a girl.
- (2) The student is at the elementary school, and she is a girl, and she is a girl, and she is a girl.
- (3) The difference between the girl student and the boy student is that the girl student is a girl, and the boy student is a boy, and the girl student is a girl, and the boy student is a boy.
- (4) The girl student is a girl, and the boy student is a boy, and the girl student is a girl, and the boy student is a boy.

mixing; the students to records and in placing them in classes where they can readily adapt their capacities.

(1) The absence is carefully noted and co-operation on the part of the teacher makes it possible for the student to make up work, whether the absence is due to truancy or illness.

(2) Unnecessary absence is largely avoided by the administration and an efficient attendance officer. Some years ago, the lack of effect of absence upon the pupil's scholarship in trades was not have been said to have been due to the teacher's carelessness and laxity in grading, but now it cannot be argued so because of the close and active co-operation of the forces mentioned.

W. H. A. M.

1000 PUPILS IN TRADES IN 1910-11.

(1) The first and most fundamental training is correspondence better than the usual classroom and teacher's lecture.

(2) The second is to give the pupils a good and complete, but it is not a very difficult, education.

2

- (3) The attendance becomes more regular as we go from high to median intelligence quotient, and more irregular as we go from median to low intelligence quotient.
- (4) Attendance is most irregular in the case of students whose grades are considerably lower than intelligence quotients.
- (5) For the bright student, discrepancies between grades and intelligence quotients have little or no effect upon attendance.
- (6) None of the conclusions have high enough statistical probability to be considered as having any extraordinary influence upon attendance regularities and the grading system.

SUGGESTIONS.

Although practically all of our schools keep attendance records with accuracy, the detailed account of attendance histories, reasons for absence, the cause of leaving school, et cetera, would do much in securing more specific results in a study of this sort and be of value to the administration of the individual school, as well

as the educational system as a whole. Data for individual cases is hard to secure, especially if so long time has elapsed since the case occurred. This is being recognized in general and the tendency is to secure an accurate detailed record of the attendance history of the individual. We need not only the mental rating, the daily grades, the attendance record of the student, but a more detailed personal history record, accurately kept in conjunction with them.

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DATA TO BE IN THIS STUDY.

In listing the data used in this study we have six columns:

1. The number of the student assigned for identification.
2. The group rating or letter grade which is found in terms of the intelligence quotient and includes the classification of the advisors.
3. The intelligence quotient.
4. The student's class grade expressed in terms of the intelligence quotient.
5. The difference between the intelligence quotient and the class grades.
6. The number of days absent.

The 1st mentioned is carried out to two decimal places because of the consideration of the fractional part of a student.

| Student | Group | Test | Grade | Difference | vs Absent |
|---------|-------|------|-------|------------|--------------|
| 101 | | 155 | 80 | 75 | .25 |
| 145 | | 161 | 76 | 75 | 10.5 |
| 168 | A | 138 | 77 | 61 | 0 |
| 131 | | 148 | 77 | 61 | .75 |
| 94 | | 130 | 69 | 62 | 1. |
| 62 | | 147 | 82 | 65 | 1.25 |
| 105 | | 153 | 85 | 65 | 1.5 |
| 94 | | 135 | 74 | 61 | 1.3 |
| 124 | | 139 | 76 | 62 | 1.5 |
| 125 | | 152 | 100 | 92 | 0. |
| 126 | | 135 | 77 | 57 | 2. |
| 90 | | 124 | 70 | 54 | 0. |
| 128 | | 139 | 76 | 53 | .2 |
| 107 | | 134 | 78 | 54 | 1. |
| 100 | | 132 | 72 | 57 | 0. |
| 117 | | 137 | 79 | 57 | 1.5 |
| 119 | | 131 | 75 | 56 | .5 |
| 25 | | 132 | 82 | 50 | 2. |
| 118 | | 132 | 82 | 50 | 3.0 |
| 149 | A | 131 | 77 | 54 | 0. |

| Student | Group | 1. | 2. | Grade | Difference | Days Present |
|---------|-------|-----|----|-------|------------|--------------|
| 116 | | 135 | 77 | 58 | | 5.75 |
| 169 | A | 137 | 77 | 59 | | 7.35 |
| 45 | | 131 | 77 | 54 | | 12.25 |
| 19 | A | 135 | 78 | 57 | | 32. |
| 14 | | 127 | 75 | 52 | | 34.75 |
| 148 | | 134 | 7 | 47 | | 0. |
| 8 | | 130 | 67 | 43 | | 0. |
| 107 | | 130 | 83 | 47 | | .25 |
| 128 | | 130 | 88 | 42 | | .25 |
| 117 | A | 130 | 88 | 42 | | .25 |
| 47 | | 130 | 87 | 43 | | .5 |
| 150 | | 133 | 86 | 47 | | .5 |
| 11 | | 133 | 74 | 49 | | .5 |
| 157 | | 131 | 75 | 46 | | 4.5 |
| 76 | | 125 | 89 | 40 | | 3. |
| 67 | A | 130 | 74 | 46 | | 3.25 |
| 55 | | 132 | 79 | 43 | | 4.5 |
| 12 | | 126 | 72 | 44 | | 6. |
| 164 | | 133 | 90 | 43 | | 4.25 |
| 154 | | 131 | 90 | 41 | | 7. |
| 60 | | 125 | 4 | 41 | | 13. |

| Student | Group acting | 1. | rade | Difference | per cent 20. |
|---------|-----------------|-----|------|------------|-----------------|
| 34 | A | 132 | 85 | 47 | |
| 54 | B | 123 | 75 | 48 | 29.75 |
| 100 | B | 116 | 80 | 36 | 1.1 |
| 109 | A | 124 | 69 | 35 | 3.5 |
| 157 | A | 116 | 72 | 37 | 2. |
| 15 | A | 118 | 75 | 3.3 | 13. |
| 61 | B | 117 | 78 | 39 | 39.25 |
| 146 | A | 112 | 83 | 29 | 12.75 |
| 23 | B | 110 | 78 | 32 | 19.25 |
| 10 | A | 107 | 75 | 32 | 20.9 |
| 64 | C | 114 | 75 | 39 | 2.2 |
| 36 | C | 114 | 70 | 34 | 3. |
| 100 | C | 114 | 80 | 14 | 4.5 |
| 27 | C | 114 | 82 | 32 | 1.5 |
| 24 | C | 105 | 73 | 32 | 4. |
| 12 | C | 96 | 70 | 26 | 32.2 |
| 92 | C | 104 | 74 | 30 | 4. |
| 44 | C | 95 | 76 | 19 | 19.25 |
| 121 | C | 103 | 77 | 26 | 7. |
| 76 | C | 100 | 77 | 23 | 24.75 |
| 6 | C | 100 | 70 | 30 | 0. |

| Student | Group | I.Q. | Grade | Difference | Days Absent | |
|---------|--------|--------|-------|------------|----------------|-----|
| | Rating | 6 plus | 110 | 87 | 23 | 1.5 |
| 15 | C " 2 | 112 | 85 | 27 | 3. | |
| 42 | C " 2 | 116 | 87 | 19 | 1.25 | |
| 66 | C " 2 | 105 | 74 | 31 | 1.35 | |
| 41 | C " 2 | 111 | 74 | 37 | 2.5 | |
| 20 | C " 2 | 114 | 73 | 41 | 2.5 | |
| 18 | C " 2 | 112 | 72 | 40 | 2.75 | |
| 112 | C " 2 | 110 | 72 | 36 | 3. | |
| 81 | C " 2 | 116 | 73 | 33 | 4. | |
| 53 | C " 2 | 116 | 74 | 32 | 2.75 | |
| 83 | C " 2 | 112 | 72 | 32 | 1.25 | |
| 13 | C " 2 | 110 | 77 | 32 | 0. | |
| 38 | C " 2 | 113 | 77 | 36 | 0. | |
| 63 | C " 2 | 105 | 75 | 30 | 0. | |
| 80 | C " 2 | 110 | 75 | 35 | 0. | |
| 33 | C " 2 | 107 | 73 | 24 | 0. | |
| 104 | C " 2 | 106 | 77 | 29 | 0.25 | |
| 46 | C " 2 | 112 | 77 | 35 | 1.75 | |
| 120 | C " 2 | 107 | 75 | 32 | 0.25 | |
| 56 | C " 2 | 112 | 73 | 34 | 2. | |
| 65 | C " 2 | 106 | 75 | 31 | 2. | |

| Student | Group | Test | Grade | Difference | Significant |
|---------|---------|------|-------|------------|-------------|
| 60 | Control | 113 | 79 | 34 | 0.05 |
| 77 | C minus | 109 | 76 | 33 | 0.05 |
| 58 | C minus | 110 | 77 | 33 | 0.05 |
| 31 | C " | 112 | 78 | 34 | 0.05 |
| 82 | C " | 112 | 76 | 36 | 0.05 |
| 73 | C " | 113 | 77 | 36 | 0.05 |
| 17 | C " | 119 | 79 | 34 | 0.05 |
| 74 | C " | 112 | 75 | 37 | 0.05 |
| 114 | C " | 111 | 75 | 36 | 0.05 |
| 77 | C " | 105 | 77 | 11 | 0.05 |
| 23 | C " | 113 | 75 | 38 | 0.05 |
| 57 | C " | 108 | 69 | 39 | 0.05 |
| 203 | C " | 110 | 61 | 49 | 0.05 |
| 30 | C " | 109 | 65 | 31 | 0.05 |
| 95 | C " | 111 | 67 | 44 | 0.05 |
| 69 | C " | 112 | 69 | 47 | 0.05 |
| 26 | C " | 112 | 80 | 32 | 0.05 |
| 72 | C " | 108 | 64 | 24 | 0.05 |
| 111 | C " | 110 | 82 | 20 | 0.05 |
| 32 | C " | 107 | 81 | 26 | 0.05 |
| 16 | C " | 105 | 60 | 25 | 0.05 |

| Student | frontal rating | lateral rating | frontal de plus | lateral de plus | difference | age | age ² |
|---------|----------------|----------------|-----------------|-----------------|------------|-----|------------------|
| 113 | C | C | 112 | 111 | -1 | 31 | 961 |
| 27 | C | C | 109 | 101 | -8 | 28 | 784 |
| 14 | C | C | 105 | 92 | -13 | 23 | 529 |
| 155 | C | C | 107 | 80 | -27 | 27 | 729 |
| 72 | C | C | 109 | 80 | -29 | 29 | 841 |
| 37 | C | C | 109 | 75 | -34 | 21 | 441 |
| 35 | C | C | 107 | 98 | 11 | 22 | 484 |
| 4 | | | 133 | 76 | -57 | 30 | 900 |
| 77 | B | B | 84 | 55 | -29 | 30 | 900 |
| 124 | | | 84 | 86 | -2 | 30 | 900 |
| 79 | | | 78 | 49 | -29 | 30 | 900 |
| 122 | B | B | 78 | 83 | 5 | 30 | 900 |
| 124 | B | B | 76 | 40 | -36 | 30 | 900 |
| 134 | B | B | 76 | 30 | -46 | 30 | 900 |
| 130 | B | B | 96 | 71 | -25 | 30 | 900 |
| 139 | C | C | 103 | 80 | -23 | 30 | 900 |
| 48 | C- | C | 89 | 50 | -39 | 30 | 900 |
| 159 | B | B | 50 | 77 | 27 | 30 | 900 |
| 83 | B | B | 52 | 77 | 25 | 30 | 900 |
| 40 | B | B | 50 | 75 | 25 | 30 | 900 |
| 21 | B | B | 76.5 | 76 | -0.5 | 30 | 900 |

| Student | Group rating | I.Q. | Grades | Difference | days absent |
|---------|--------------|------|--------|------------|-------------|
| 82 | B | 84 | 77 | 7 | .5 |
| 107 | B | 80 | 77 | 3 | 1.5 |
| 49 | B | 82 | 75 | 7 | 1.75 |
| 129 | B | 84 | 78 | 6 | 1.75 |
| 9 | B | 78 | 75 | 3 | 2.5 |
| 143 | B | 77.5 | 75 | 2.5 | 3. |
| 141 | B | 81 | 76 | 5 | 3. |
| 136 | B | 82.5 | 77.5 | 5.0 | 3. |
| 43 | C | 84 | 75 | 9 | 3.5 |
| 102 | C | 81 | 75 | 6 | 4. |
| 70 | B | 84 | 76 | 8 | 11. |
| 106 | B | 79 | 77 | 2 | 11.5 |
| 163 | B | 78 | 75 | 3 | 0. |
| 28 | B | 71 | 70 | 1 | .75 |
| 29 | C | 74 | 72 | 2 | .75 |
| 139 | C | 72 | 73 | 6 | 1.5 |
| 99 | C | 71.5 | 71.4 | 7.1 | 1.5 |
| 133 | B | 70 | 75 | -- | 1.5 |
| 91 | B | 72 | 70 | 2 | 1.75 |
| 153 | B | 70 | 74 | 6 | 2.5 |
| 123 | B | 81 | 70 | 11 | 1.75 |

| student | group | rating | 1 + 2 | grade | difference | z = |
|---------|-------|--------|-------|-------|------------|-------|
| 138 | D | 71 | 70 | 2 | -1 | -0.91 |
| 122 | D | 73 | 74 | -4 | -1 | -0.00 |
| 1 | D | 74 | 60 | 24 | 20.70 | |
| 132 | D | 72 | 75 | -3 | -0.5 | |
| 140 | - | 66 | 73 | 13 | 1.1 | |
| 59 | - | 62 | 67 | 15 | 0.8 | |
| 162 | D | 77 | 66 | 9 | -1.5 | |
| 147 | - | 83 | 67 | 16 | 1.75 | |
| 151 | D | 74 | 67 | 17 | 1.17 | |
| 160 | - | 74 | 67 | 17 | 1.37 | |
| 70 | D | 70 | 63 | 7 | 0.0 | |
| 75 | - | 63 | 63 | 20 | 0.75 | |
| 94 | - | 74 | 63 | 21 | 1.5 | |





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